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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: **DIAGNOSTICS AND THERAPEUTICS FOR DISEASES ASSOCIATED WITH N-FORMYL PEPTIDE RECEPTOR LIKE 1 (FPRL1)**

(57) Abstract: The invention provides a human FPRL1 which is associated with the hematological diseases, cardiovascular diseases, disorders of the peripheral and central nervous system, respiratory diseases like COPD, asthma, genito-urological disorders and inflammation diseases. The invention also provides assays for the identification of compounds useful in the treatment or prevention of hematological diseases, cardiovascular diseases, disorders of the peripheral and central nervous system, respiratory diseases like COPD, asthma, genito-urological disorders and inflammation diseases. The invention also features compounds which bind to and/or activate or inhibit the activity of FPRL1 as well as pharmaceutical compositions comprising such compounds.



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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/02959

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61K38/00 G01N33/74 G01N33/56 C12Q1/68 G01N33/68

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, WPI Data, PAJ, EMBASE, Sequence Search

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01 68839 A (BAYER AG ;RAMAKRISHNAN SHYAM (US)) 20 September 2001 (2001-09-20) page 74, lines 1-5; claims; examples 13,14; tables 1,2 abstract	1-26
X	----- SERHAN C N ET AL: "LIPOXIN AND ASPIRIN-TRIGGERED 15-EPI-LIPOXIN CELLULAR INTERACTIONS ANTI-INFLAMMATORY LIPID MEDIATORS" CLINICAL CHEMISTRY AND LABORATORY MEDICINE, WALTER DE GRUYTER UND CO, DE, vol. 37, no. 3, March 1999 (1999-03), pages 299-309, XP008017773 ISSN: 1434-6621 abstract; table 3 page 302, column 2, paragraph 1 ----- -/-	1-26

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

8 August 2003

Date of mailing of the international search report

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/02959

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01 21188 A (OPPENHEIM JOOST J ;GONG WANG HUA (US); US HEALTH (US); GAO JI LIAN) 29 March 2001 (2001-03-29) abstract; claims -----	19-23,25
X	WO 02 18938 A (BOEHRINGER INGELHEIM PHARMA ;JUNG BIRGIT (DE); KRAUT NORBERT (DE);) 7 March 2002 (2002-03-07) claims; examples 2,3; tables 1-3 -----	19-23,25

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 03/02959

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
  
Although claim 26 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☒ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-26 ALL PARTIALLY

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: Claims 1-26 (all partially)

FPRL1 in methods for screening for therapeutic agents useful in the treatment of haematological diseases, in methods of diagnosis of said diseases, pharmaceutical compositions containing therapeutic agents for the treatment of said diseases, their production and their use

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2. claims: Claims 1-26 (all partially)

FPRL1 in methods for screening for therapeutic agents useful in the treatment of cardiovascular diseases, in methods of diagnosis of said diseases, pharmaceutical compositions containing therapeutic agents for the treatment of said diseases, their production and their use

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3. claims: Claims 1-26 (all partially)

FPRL1 in methods for screening for therapeutic agents useful in the treatment of peripheral and central nervous system diseases, in methods of diagnosis of said diseases, pharmaceutical compositions containing therapeutic agents for the treatment of said diseases, their production and their use

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4. claims: Claims 1-26 (all partially)

FPRL1 in methods for screening for therapeutic agents useful in the treatment of the respiratory disease COPD, in methods of diagnosis of said disease, pharmaceutical compositions containing therapeutic agents for the treatment of said disease, their production and their use

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5. claims: Claims 1-26 (all partially)

FPRL1 in methods for screening for therapeutic agents useful in the treatment of the respiratory disease asthma, in methods of diagnosis of said diseases, pharmaceutical compositions containing therapeutic agents for the treatment of said diseases, their production and their use

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6. claims: Claims 1-26 (all partially)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

FPRL1 in methods for screening for therapeutic agents useful in the treatment of genitological disorders, in methods of diagnosis of said disorders, pharmaceutical compositions containing therapeutic agents for the treatment of said disorders, their production and their use  
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7. claims: Claims 1-26 (all partially)

FPRL1 in methods for screening for therapeutic agents useful in the treatment of urological disorders, in methods of diagnosis of said disorders, pharmaceutical compositions containing therapeutic agents for the treatment of said disorders, their production and their use  
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8. claims: Claims 1-26 (all partially)

FPRL1 in methods for screening for therapeutic agents useful in the treatment of inflammation diseases, in methods of diagnosis of said diseases, pharmaceutical compositions containing therapeutic agents for the treatment of said diseases, their production and their use  
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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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Continuation of Box I.2

Claims Nos.: -

Present claims 19-21,24-26 relate to a pharmaceutical composition, its production and its use defined by reference to a desirable characteristic or property, namely binding to or regulating the activity of a FPRL1 polypeptide. No true technical characterization is given.

The claims cover all pharmaceutical compositions, their production and their use having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such pharmaceutical compositions. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the pharmaceutical compositions, their production and their use by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to the examples (antisense oligonucleotides, antibody).

Present claims relate to an extremely large number of possible diseases. In fact, the terms used to identify the different diseases are so broad and vague that that a lack of clarity (and/or conciseness) within the meaning of Article 6 PCT arises to such an extent as to render a meaningful search of the claims impossible. Consequently, the search has been carried out for those parts of the application which do appear to be clear (and/or concise), namely the relationship between FPRL1 and specific diseases/symptoms/tissues, namely erythrocytes and closely related tissues/cells (based on description pg 58 (lines 13-16))

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 03/02959

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0168839	A	20-09-2001	AU 5218101 A	24-09-2001
			WO 0168839 A2	20-09-2001
			EP 1266005 A2	18-12-2002
			US 2002058259 A1	16-05-2002
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WO 0121188	A	29-03-2001	WO 0121188 A1	29-03-2001
			AU 6395199 A	24-04-2001
			CA 2383172 A1	29-03-2001
			US 2003120037 A1	26-06-2003
-----				
WO 0218938	A	07-03-2002	AU 8211801 A	13-03-2002
			CA 2418506 A1	07-03-2002
			WO 0218938 A1	07-03-2002
			EP 1315963 A1	04-06-2003
			US 2002119494 A1	29-08-2002
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